ODS SURVEY UPDATE
293RD BSB MANNHEIM

FINAL REPORT

Contract
USAREUR wide Ozone Depleting Substances (ODS) Survey Update
Regional Contracting Office Seckenheim
DABN03-03-D-0001, D.O. 0002
BH Project 06300-02
October 2004

BUCHART HORN GmbH / IMA-Europe

EXECUTIVE SUMMARY

This report concerns the identification and elimination of Ozone Depleting Substances (ODS) within the facilities of the 293rd BSB Mannheim.

Although the Installation Commander holds final responsibility for the installation to eliminate their dependency on the commercial availability of Ozone Depleting Substances (ODS), the day-to-day responsibility rests with the members and Chair of the ODS Elimination Team. The ODS Team has been formed and includes seven members. Its mission and objectives have been established and the ODS Team is committed to eliminate the 293rd BSB's dependence on commercial availability of ODS I by end of FY03 and all ODS by 2015.

For the 293rd BSB to achieve this goal, it must have an inventory of all ODS around the installation. ODS are in non compliance with Final Governing Standards (FGS) regulations, European Regulations, and German regulations (see Chapter 4).

ODS include halons, chlorofluorocarbons (CFCs), hydro-chlorofluorocarbons (HCFCs) and certain solvents.

Halons and CFC have a high Ozone Depleting Potential (ODP) and are therefore classified ODS I. HCFC have a lower ODP, they are therefore classified ODS II.

Buchart-Horn has surveyed all installations for ODS and developed a database for ODS containing equipment. The 293rd BSB was surveyed during February 2004. Equipment with ODS was surveyed, recorded, photographed and tagged.

Army DPW, AAFES, DeCA, DoDDS and MWR facilities were surveyed. No DeCA owned ODS containing equipment was found during the survey. ODS containing equipment of DoDDS and MWR is owned and serviced by DPW. Army DPW and AAFES each have their own programs for managing their ODS equipment. Data about ODS containing equipment at AAFES facilities is provided as a courtesy in the appendices of this report.

Due to the scope of the project, all hermetically sealed equipment such as home refrigerators, and window air conditioners were excluded from the inventory. Equipment containing less than 1 kg of refrigerant was also excluded from the survey based on German Law. Due to its small size this equipment cannot be "topped-off" but has to be replaced if it fails. Nevertheless, some of this equipment was included in the database during the survey. GSA vehicles are also not included in this survey. Also excluded from the scope were weapon systems, tactical vehicles and temporary installations.

Detailed information about all equipment surveyed can be extracted from the database, provided with this report.

Survey Results:

Army Facilities – BSB DPW:

Content	Pieces of Equipment	Charge in Kg	Required Activity	Associated Cost Min	Max
ODS I	12	20.2	Upgrade / Replace	drop-in[1)] €8,200	Replace[2)] €90,000
Unknown ODS	1	10.0	Further Investigation needed (Identify Refrigerant)	€100	€100
ODS II	161	748.3	No immediate activity required (Action required after 2015)	€0	€0
Total	174	778.5	N/A	€8,300	€90,100

AAFES Facilities:

Content	Pieces of Equipment	Charge in Kg	Required Activity	Associated Cost Min	Max
ODS I	4	1.6	Upgrade / Replace	drop-in[2)] €2,500	replace[3)] €26,000
Unknown ODS	None	N/A	Further Investigation needed (Identify Refrigerant)	N/A	N/A
ODS II	66	565.4	No immediate activity required (Action required after 2015)	€0	€0
Total	70	567.0	N/A	€2,500	€26,000

[1)] "drop-in" is the minimum solution required for compliance and means replacing an existing refrigerant with an alternative refrigerant without replacing any significant hardware.

[2)] "replace" is the maximum solution required for compliance and refers of the replacement of the entire refrigeration system; to include compressor, condenser and refrigerant.

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1.0 INSTALLATION

"Installation Commanders must eliminate their dependency on the commercial availability of ODS I's by end of FY03."
ACSIM ODEP ODS Policy Memorandum 7 January 2003

The 293rd BSB is located in Mannheim in the German State of Baden-Württemberg. Mannheim is the second largest city in the state with a population of about 340,000. Facilities supported in the Mannheim area include Sullivan, Funari, Taylor, Spinelli, Coleman, and Turley Barracks; Benjamin Franklin Village, Grünstadt AAFES Facility and the Friedrichsfeld Quarter Master area; as well as the Dannenfels and Grünstadt Community Stations.

The following installation information is provided in this chapter:

- 1.1 List of Installation names, ARLOC numbers, locations and major uses,
- 1.2 List of Installation host and tenant organizations with point of contact

1.1 List of 293rd BSB Installations

Installation Name	ARLOC	Location	Use(s)
Benjamin Franklin Village Family Housing	GE 07P	Mannheim	Housing, Community Activity, Clinics
Coleman Barracks	GE 140	Mannheim	Barracks, Airfield, Prison, Community Activity
Dannenfels Communication Station	GE 15F	Dannenfels	Communication Site
Edigheim Beacon Site	GE 19D	Edigheim	Communication Site
Friedrichsfeld Quarter Master Service Center	GE 27S	Friedrichsfeld	Warehouses, Workshops
Friedrichsfeld Storage Area	GE 27T	Friedrichsfeld	Warehouses
Funari Barracks	GE 28T	Mannheim	Barracks, Community Activity
Grünstadt Communication Station	GE 32F	Grünstadt	Communication Site
Grünstadt AAFES Facilities	GE 32H	Grünstadt	Warehouses, Food Production
Lampertheim Training Area	GE 478	Lampertheim	Maneuver Training
Mannheim Class III Point	GE 52F	Mannheim	DRMO
Spinelli Barracks	GE 79R	Mannheim	Barracks, Warehouses
Sullivan Barracks	GE 82J	Mannheim	Barracks, Community Activity
Taylor Barracks	GE 83C	Mannheim	Administration, Barracks, Community Activity
Turley Barracks	GE856	Mannheim	University, Barracks, Community Activity

1.2 List of 293rd BSB Organizations

Taylor Bks	Coleman Bks	Sullivan Bks	Spinelli Bks	Turley Bks	Funari Bks	Friedrichsfeld	BFV	WORMS
2d Sig Bde	HQ, 18th MP Bde	7th Sig Bde	51st Maint Bn	181st Trans Bn	5th Sig Cmd (96)	CFMO (RSC)	Med/Den Fac	Strip Yard
293d BSB: DPW	11th Sig Det	44th Sig Bn	574th S&S Co	: 51st Trans Co		AMC	Youth Svcs	
DPW: Self Help Store	28th Trans Bn	A, B, C Co's	512 (DS) Maint Co	: 515 Trans Co	Boy/Girl Scouts	**TAAMC(-)	Child Dev Ctrs	
DOL: POV Ship / Rec	:68 & 69 Trans Co's	293d BSB HQs	Map Whse	:11TC (admin/SSQ)	MCSC/CDOIM	** DCSLOG (-)	SATO	
DOL: PBO	:70 & 109 Trans Co's	IOP Center	11TC (HET)(maint)	596 MCT	KANTINE	**CECOM	510th Postal Co (-)	
DCA: Autocraft	:260th TTP	Red Cross	ELC	U of M & dorms	ASMF/ITT(stor)	AAFES	AAFES: PX	
Outdoor Rec	9th MP Det (Conf Fac)	4 ASOS (AF)	NSE	USAREUR Claims	2 Slg Bde Schl	LANDCENT site	:Class VI	
	MCT-M / BMCT	USO	Small Comp Issue Fac	AAFES SHOPPETTE	SAIC (stor)	FEEMA	:Bowling Ctr	
95th MP Bn	MAOC & LSA	510th PSB	V Corps Storage		Var contractors		:Site & Sound	
272d MP Co	AAFES Opt Shp	:Det A	ASG CIF	527 MI Bn (-)			:Movie Theater	
560th MP Co	6981CSG (Sig)	:510th Postal Co	ESS-X (7th ARCOM)	UofM (auto)(extens)			:Var Concessions	
72d Sig Bn (HHD)	2/502 AVN Regt	ITT/FSIC	Gym/Fitness Ctr	Temp Billets:			:Trng Ctr	
:58th Sig Co	(+civ contr. & MICON)	CCC	Regional Post Office	95 MP BN			:Video	
:268th Sig Co	AMF(L)	SWS	CFMO Storage			(**with AMC)	:car sales	
:324th Sig Co	MWR: Autocraft	EFMP	AAFES Storage				:car rental	
USAREUR OPM	1-214 AVN REG	Community Bank	Pxtra/Toyland				:laundry fac	
USAREUR Veh Reg	735/89 Med/Den Fac	ACAP/TAO	515 TC (parking)				:beauty shop	
SW Law Ctr (JAG)	4 Weather SQDN	SFCU	Shopette				:pickup point	
66th MI GRP (-)	510th Postal Co (-)	DPW:Housing	POV Storage				DODDS	
AAFES: MCSS	FSIC/ITT	HOMES	ASG S-1 NAF				: High School	
:Auto Parts/ Garage	Aero Club	Library& Ed Ctr	IFMS (GSA)				:Elem School	
:Accounting	USAREUR Oil Lab	Gym & Fitness Ctr	720 EOD				:Middle School	
	Ed Ctr	Vet Svcs	208th Fin Bn				Shopette	
MAM(29 SG)	TASC/ Photo/ Rng Cntrl		SSO/SSSC				Top Hat Club	
Transcar Shipping	COMMUNTIY BANK	Drivers Testing	Spacelink					
	DPW: Fire Dept	Commissary	DAPS					
524 Maint Co (TMDE)	Dist Lrng Ctr	208th Fin Det	PUBS					
2d Sig Bde Schl	AAFES Shoppete	All Star GmbH						
Fitness Ctr	RNTC (Theater Co)	TKS Cable TV						
DPW SORT CTR	MICON	GTE						
	Coleman Club	CDS & FMD						
	Army Rec Mach Prog	ACS & FAC						
	Pond's Security	Cove						
	280th Spt Ctr (ROC)	CPPSO						
	REFO (Real Estate)	DECA (new)						
	Railhead Opns							

2.0 TEAM

"Installation Commanders must eliminate their dependency on the commercial availability of ODS Is by end of FY03."
"Overseas installations must comply with applicable Final Governing Standards and any applicable international treaty obligations."
IMA Memorandum Richard A. Hoefert, Colonel, GS; Director, Environmental Program, DC 07 January 2003

The 293rd BSB ODS Team consists of seven members, including the Chair. Team members include the DPW, representatives from the Environmental Division, Operations and Maintenance Division, Finance, Fire Department, Real Property and a representative from the Directorate of Logistics. Members of the team will provide organizational expertise and a commitment to focus on phasing out ODS I within the 293rd BSB in the near future.

The ODS Team should meet regularly to identify issues and actions, as well as determine individual responsibilities.

Although the Installation Commander holds final responsibility for the installations to eliminate their dependency on the commercial availability of ODS I by end of FY 03, the day-to-day responsibility rests with the members and Chair of the ODS Elimination Team.

The main goals for the ODS Team are:

- Education and implementation of ODS regulations and policy to the Army and civilian members of 293rd BSB.
- To confirm that Army and civilians servicing the equipment with ODS refrigerant are following the FGS regulations regarding Ozone Depleting Substances.

The objectives are:

- Maintenance of ODS recovery and logistics procedures
- Development of ODS management practices (including the upkeep of the ODS plan)
- The identification of resources needed to execute the ODS phase out plan.

The following information is included in this chapter:

- 2.1 Installation Commander's Buy-in Statement
- 2.2 ODS Team Roster
- 2.3 ODS Team Mission Statement

2.1 Installation Commander's Buy-in Statement

DEPARTMENT OF THE ARMY
293D BASE SUPPORT BATTALION
UNIT 29901
APO AE 09086-9901

AEUSG-MA-PW

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Support of the Army Ozone Depleting Substances (ODS) Survey

1. An Installation Management Activity Europe Region (IMA-E) ODS survey team will visit the 293d Base Support Battalion (BSB) from 2 – 13 February 2004. The survey team, assisted by the Directorate of Public Works (DPW), will identify equipment, devices and products that contain ODS, in order to prepare and take action to eliminate ODS from Army facilities. The teams will need your assistance while visiting all installations, examine facilities, interview personnel, and review records.

2. The 293d Base Support Battalion still uses some ODS. They may be found in some air conditioning and refrigeration equipment. By Army policy, BSBs must eliminate dependency on ODS and must comply with the Final Governing Standards (FGS) requirements concerning the handling and use of ODS. The need to plan for and eliminate ODS from our facilities is very important. Failure to do so could negatively impact our readiness and quality of life.

3. As a result of actions taken by Congress and parties to the Montreal Protocol, ozone-depleting substances (ODS) such as halons and chlorofluorocarbons are no longer produced or marketed. Congress through Public Law, the President by executive order, the Environmental Protection Agency and the FGS by regulatory actions further limited the procurement and use of ODS. Although these actions pose a challenge to maintaining effective facilities, I strongly support them.

4. POC is Mr. Yitbarek Gebreyohannes, DPW, Environmental Division, DSN 381-7699.

for C Seeme
SCOTT A. SMITH
MAJ, EN
Director of Public Works

DISTRIBUTION:
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2.2 293rd BSB Mannheim ODS Elimination Team

Name	Unit	Function	DSN Number	Civilian Phone	E-mail Address
MAJ Smith	Directorate of Public Works	Team Chief	380-1560	N/A	N/A
Mr. Ott	Directorate of Public Works	Fire Department	382-4690	0621 / 779-4690	volker.ott@bsbdpw.mannheim.army.mil
Mr. Gregory Terry	Directorate of Logistics	Logistics	380-1540	N/A	gregory.terry@cmtymail.26asg.army.mil
Mr. Kroll	Directorate of Public Works	Finance	381-7063	0621 / 730-7063	hans.kroll@bsbdpw.mannheim.army.mil
Ms. Foley	Directorate of Public Works	Environmental	381-8675	0621 / 730-8675	mary.foley@bsbdpw.mannheim.army.mil
Mr. Junk	Directorate of Public Works	Real Property	381-7555	0621 / 730-7555	michael.junk@cmty.26asg.army.mil
Mr. Theobald	Directorate of Public Works	Maintenance	381-7645	0621 / 730-7645	otto.theobald@bsbdpw.mannheim.army.mil

2.3 293rd BSB ODS Team Mission Statement

Mission:

Through responsible management of all ODS assets, facilities modification, energy efficiency programs, and environmental and real property OMA resources, 293rd BSB Mannheim will completely eliminate its dependency on ODS Is.

Objectives:

Retrofit, replace, or otherwise retire all air conditioning and refrigeration equipment using chlorofluorocarbon (CFC) refrigerant that requires refilling.

Retrofit, replace, or otherwise retire all air conditioning and refrigeration equipment using chlorofluorocarbon (CFC) refrigerant when economically feasible and substitute refrigerant is available.

Recover all CFC refrigerants installed in retired air conditioning and refrigeration equipment and turn them in to the Army ODS Reserve.

Retrofit, replace, or otherwise retire all air conditioning and refrigeration equipment using HCFC refrigerant that requires refilling with HCFC refrigerant by the end of fiscal year 2015.

Educate and Assist the Army and civilians in the 293rd BSB in understanding the need to achieve this mission and the steps required.

Minimize the impact on the operations and maintenance account of all ODS retrofits, replacements, or other conversions by using to the maximum extent possible resourcing options available through facilities' modernization and energy efficiency programs.

3.0 INVENTORY

"These responsibilities include the inventory of Installation owned equipment and facilities occupied by Army and non-Army tenant organizations."
ASA (IL&E) Memorandum 13 Feb 1996

The 293rd BSB was surveyed for Ozone Depleting Substances (ODS) that include Halons (ODS I), Chlorofluorocarbons (CFCs ODS I), and Hydro-Chlorofluorocarbons (HCFCs ODS II).

ODS I - Halons are commonly found in fire suppression or fire extinguishing systems and can be identified as Halon-1202, 1211, 1301, or 2402 (see Table 4-1).
ODS I - CFCs are utilized in refrigeration and air conditioning systems and are identified by a variety of numbers (see Table 4-1).
ODS II - HCFCs are utilized in refrigeration and air conditioning systems and are identified by a variety of numbers (see Table 4-1).
ODS unknown refers to pieces of equipment with no information available about the refrigerant.
Non-ODS refers to equipment containing refrigerant not being harmful to ozone.

For detailed information about the surveyed parameters; see Appendix F, Field Forms.

Army DPW and AAFES owned ODS containing equipment was surveyed, recorded, photographed and tagged. Detailed information about Army DPW owned equipment is available in the end of this Chapter. AAFES has their own program for managing their ODS equipment. Data about ODS containing equipment at AAFES facilities is provided as a courtesy in the appendices of this report.

Based on the project scope, all hermetically sealed equipment such as home refrigerators, and window air conditioners were excluded from the inventory. Equipment containing less than 1 kg of refrigerant was also excluded from the survey based on German Law. Due to the small size this equipment cannot be "topped-off" but has to be replaced if it fails. Nevertheless, some of this equipment was included in the database during the survey. GSA vehicles are also not included in this survey. Also excluded from the scope, were weapon systems, tactical vehicles and temporary installations.

Detailed information about all equipment surveyed can be extracted from the database, provided together with this report.

Survey results overview - Army Facilities BSB DPW:

Content	Pieces of Equipment	Charge in Kg
ODS I	12	20.2
Unknown ODS	1	10.0
ODS II	161	748.3
Total	174	778.5

3.1 ODS I

CFC refrigerant is referred to as ODS I. As specified in chapter 4 of this report, the handling of ODS I is prohibited. Equipment with CFC is considered in non-compliance at the moment it starts leaking (needs refill) or requires major repair. Two types of ODS I refrigerants (R12 and R502) were found in the equipment surveyed.

Halon is also referred to as ODS I. Halons are commonly found in fire suppression or fire extinguishing systems and can be identified as Halon-1202, 1211, 1301, or 2402. All Halon Fire Suppression Systems and Halon Fire Extinguishers were dismantled and disposed of in the 293rd BSB. A statement from 293rd BSB Chief Fire Prevention, Rainer Krug verifying their disposal is provided in 3.5. The Halon systems have been replaced by sprinklers, dry chemical systems, or hand-held fire extinguishers.

Results of the 2004 inventory regarding ODS I containing equipment are shown in 3.6.

Compared to the ODS I equipment survey performed in 2000, it was found that approx. 95% of the ODS I equipment identified at that time had been replaced or removed in the interim. Only 12 pieces of Army DPW owned ODS I equipment are still remaining.

3.2 ODS II

HCFC refrigerant is referred to as ODS II. As specified in chapter 4 of this report, the handling of ODS II within existing equipment is currently not restricted. ODS II therefore is considered to be in compliance with FGS and German regulations. Restrictions for the use within existing equipment do not become effective prior to the year 2010. The ODS II refrigerants found in the equipment were R22, R401A, R402A and R408A. The results of the 2004 inventory regarding ODS II containing equipment are shown in Appendix B.

3.3 ODS unknown

Some pieces of equipment had no information about the refrigerant. Also no records were available from DPW or the servicing organization. In this case, the refrigerant was called ODS unknown. The equipment needs further research or testing to identify the refrigerant.
The results of the 2004 inventory regarding ODS unknown containing equipment are shown in 3.7.

3.4 Non-ODS

Equipment containing non-ODS (e.g. R134A and R407C) is out of the scope of the plan because it is not affected by environmental legal restrictions.

The following information is also included in this chapter:

- 3.5: Fire Chief Statement
- 3.6: ODS I Containing Equipment at BSB facilities (w/o AAFES)
- 3.7: ODS unknown Refrigerant containing equipment at BSB facilities (w/o AAFES)

3.5 293rd BSB Chief Fire Prevention Statement

07 Mai 04 10:08 F&ESD, Mannheim 382-4668 S.1
382 4668

DEPARTMENT OF THE ARMY
293D BASE SUPPORT BATTALION
UNIT 29901
APO AE 09086-9901

AEUSG-MA-PW-F 7 May 2004

MEMORANDUM FOR Firm Buchart-Horn, Frankfurt

SUBJECT: Ozone depleting chemicals in fire protection systems, 293D BSB

1. There are no fire protection systems within the 293D BSB Mannheim that contain ozone depleteing chemicals in their extinguishing or propellant agents.
2. POC is the undersigned at DSN 382-4690, Email: R.Krug@us.army.mil

RAINER KRUG
C/Fire Prevention
293D F&ESD

DEPARTMENT OF THE US ARMY MANNHEIM US ARMEE FEUERWEHR

3.6 Table: ODS I containing Equipment

(only BSB DPW incl. DoDDS and MWR, w/o AAFES)

ODS ID NO	ARLOC	Installation	Bldg	Location	Equipment	Manu-facturer	Manufacturer / Serial No.	Condition	Charge (kg)	Refri-gerant	Year installed	Service Org.	Service POC
0026	GE 82J	SULLIVAN BARRACKS	240	Exterior	Walk-in-refrigerator	L'Unite Hermetique	DAJ85113T / 22752301	Fair	3.5	R 502	1994	DPW	Mr. Theobald
0095	GE 140	COLEMAN BARRACKS	86	Club, kitchen	Ice Cube Maker	Scotsman	CM65OAF-6E / 602090-07L	Poor	1.1	R 502	Unknown	DPW	Mr. Theobald
0096	GE 140	COLEMAN BARRACKS	86	Club, kitchen	Cooler	Küba	Unknown / 8070672	Fair	0.5	R 12	1992	DPW	Mr. Theobald
0097	GE 140	COLEMAN BARRACKS	86	Club, kitchen	Cooler	Küba	Unknown / 8073277	Fair	0.5	R 12	1992	DPW	Mr. Theobald
0098	GE 140	COLEMAN BARRACKS	86	Club, kitchen	Cooler	Küba	Unknown / 80663682	Fair	0.5	R 12	1992	DPW	Mr. Theobald
0110	GE 140	COLEMAN BARRACKS	45	Mess hall, kitchen	Ice Cube Maker	Ross Temp	RC360BC-2-50 / JJ6432	Fair	1.1	R 12	Unknown	DPW	Mr. Theobald
0111	GE 140	COLEMAN BARRACKS	45	Mess hall, kitchen	2-door-freezer	Gram	J2192K / 164DA01	Poor	0.8	R 502	Unknown	DPW	Mr. Theobald
0124	GE 856	TURLEY BARRACKS	475	Kitchen	6-Door-Refrigerator	Jordan	SKT-24-SS-H / S6144992E	Fair	3.0	R 12	1994	DPW	Mr. Theobald
0125	GE 856	TURLEY BARRACKS	475	Kitchen	6-Door-Refrigerator	Jordan	SKT-74-SS-H / 215-535-8300	Fair	3.0	R 12	1995	DPW	Mr. Theobald
0126	GE 856	TURLEY BARRACKS	475	Kitchen	6-Door-Refrigerator	Jordan	SKT-74-SS-H / 215-535-8300	Fair	3.0	R 12	1995	DPW	Mr. Theobald
0127	GE 856	TURLEY BARRACKS	475	Kitchen	6-Door-Refrigerator	Jordan	SKT-74-SS-H / 215-535-8300	Fair	3.0	R 12	1996	DPW	Mr. Theobald
1003	GE 07P	BENJAMIN FRANKLIN VILLAGE	747	Store	Freezer	Starrett	ARG20033 / AZ201	Fair	0.2	R 12	1992	DPW	Mr. Theobald

3.7 Table: Equipment with unknown Refrigerant

(only BSB DPW incl. DoDDS and MWR, w/o AAFES)

ODS ID NO	ARLOC	Installation	Bldg.	Location	Equipment	Manufacturer	Manufacturer / Serial No.	Year installed	Refrigerant Charge (kg)	Service Org.	Service POC	Recommendation
0016	GE 83C	TAYLOR BARRACKS	429	Exterior, conference rooms	A/C-Split-Unit	ASEA	M071LV4 / unknown	Unknown	Unknown	DPW	Mr. Theobald	Investigate further

4.0 RULES AND REGULATIONS

"Overseas installations must comply with applicable Final Governing Standards and any applicable international treaty obligations."
ACSIM Memorandum 25 November 2002

"Article 53 of the NATO SOFA SA states that German Law applies within a DoD installation" Final Governing Standards for Germany Chapter 1 Section C1.1 – January 2003

"Any operation, maintenance, or shut-down procedures involving ODSs must not allow the substances to escape into the atmosphere and must conform to the state of the art practices, except for actual emergency use of fire extinguishers substances."
Final Governing Standards for Germany Chapter 2 Section 3.6.1 – January 2003

Article 4
"Control of the placing on the market and use of controlled substances
1. Subject to paragraphs 4 and 5, the placing on the market and the use of the following controlled substances shall be prohibited:
(a) chlorofluorocarbons;
(b) other fully halogenated chlorofluorocarbons;
(c) halons;
(d) carbon tetrachloride;
(e) 1,1,1-trichloroethane; and
(f) hydrobromofluorocarbons."
EC Regulation no. 2037/2000 Chapter II, Article 4 section 1.

In accordance with DoD Directive 6050.16, DoD Policy for Establishing and Implementing Environmental Standards at Overseas Installations, environmental programs are managed in accordance with the Final Governing Standards (FGS) developed by the DoD for its operations in that country. The FGS are developed by a process of comparing U.S. regulations (as found in the Overseas Environmental Baseline Guidance Document) to Host Nation regulations and selecting the criteria that is more protective of human health and the environment.

However, the Supplemental Agreement to the Status of Forces Agreement (SOFA) with Germany requires DoD to apply German law to their use of an installation (except on internal matters with no effect on others). Thus, German regulations concerning ODS were researched and are generally considered the compliance standard upon which this ODS Survey Update was prepared.

As a member state of the European Community German Laws are strongly influenced by the European Regulations. The EU-Regulation on Substances that deplete the Ozone Layer is legally binding in Germany. Therefore standards set by the EU Regulation 2037/2000 are also considered the compliance standard for this report.

Regulations for the U.S. are not directly applicable to the 293rd BSB. They are provided herein for informational purposes, though, since Army policy is that the intent of U.S. law respecting environmental protection on DoD installations overseas be followed. To the extent possible, however, Army and DoD standards remain a requirement for the U.S. Army operating overseas.

All of these requirements are summarized below. An evaluation of current compliance with these requirements is included where noted.

4.1 Final Governing Standards - Germany

The FGS for Germany were last updated in January 2003. In the current version of the FGS ozone depleting substances are discussed in Chapter 2 section C2.3.6. Their restrictions and prohibitions are detailed in this section. Table C2.T10 lists ozone depleting substances covered by the FGS (See table 4-1).

FGS defines eight groups of ozone depleting substances:

1) Chlorofluorocarbons
2) Other Fully Halogenated Chlorofluorocarbons
3) Halons
4) Carbon Tetrachloride
5) 1,1,1-trichloroethane
6) Methyl Bromide
7) Hydrobromofluorocarbons
8) Hydrochlorofluorocarbons

In reference to this report the groups 1 to 7 are ODS I, group 8 consists of ODS II

Reviewing the FGS results in the finding that it covers both German Law (FCKW Verbotsverordnung) and the European Law (EU-Regulation on Substances that deplete the Ozone Layer).

FGS 2.3.6.2 refers to certain chemical substances as restricted ODSs in Germany.
In table C2.T10, these are marked with an asterisk, "*" which indicate the ones restricted by the German Ordinance.

FGS C2.3.6.3 refers to a more general use prohibition for CFCs, halons, carbon tetrachloride, 1,1,1-trichloroethane, and hydrobromofluorocarbons, which are the substances (beside others) restricted by the EU Regulation.

Table 4-1: Table C2.T10 - Ozone Depleting Substances

Molecular Formula	Common Name	CAS Number	Chemical Name
Chlorofluorocarbons (CFCs)			
$CFCl_3$	CFC – 11	75-69-4	Trichlorofluoromethane *
CF_2Cl_2	CFC – 12	75-71-8	Dichlorodifluoromethane *
$C_2F_3Cl_3$	CFC – 113	76-13-1	Trichlorotrifluoroethane *
$C_2F_4Cl_2$	CFC – 114	76-14-2	Dichlorotetrafluoroethane *
C_2F_5Cl	CFC – 115	76-15-3	Chloropentafluoroethane *
Other Fully Halogenated Chlorofluorocarbons			
CF_3Cl	CFC – 13	75-72-9	Chlorotrifluoromethane *
C_2FCl_5	CFC – 111	354-56-3	Pentachlorofluoroethane
$C_2F_2Cl_4$	CFC – 112	76-12-0	Tetrachlorodifluoroethane *
C_3FCl_7	CFC – 211	422-78-6	Heptachlorofluoropropane
$C_3F_2Cl_6$	CFC – 212	3182-26-1	Hexachlorodifluoropropane
$C_3F_3Cl_5$	CFC – 213	2354 06 5	Pentachlorotrifluoropropane
$C_3F_4Cl_4$	CFC – 214	29255-31-0	Tetrachlorotetrafluoropropane
$C_3F_5Cl_3$	CFC – 215	4259-43-2	Trichloropentafluoropropane
$C_3F_6Cl_2$	CFC – 216	661-97-2	Dichlorohexafluoropropane
C_3F_7Cl	CFC – 217	422-86-6	Chloroheptafluoropropane
$CF_2Cl_2 \cdot C_2F_2H_4$	CFC – 500	56275-41-3	Dichlorodifluoromethane · Difluoroethane
$CHF_2Cl \cdot C_2F_5Cl$	CFC – 502	74-45-6 and 76-15-3	Chlorodifluoromethane · Chloropentafluoroethane
$CF_3Cl \cdot CHF_3$	CFC – 503	75-72-9 and 75-46-7	Chlorotrifluoromethane · Trifluoromethane
Halons			
CF_2BrCl	Halon – 1211	353-59-3	Bromochlorodifluoromethane *
CF_3Br	Halon – 1301	75-63-8	Bromotrifluoromethane *
$C_2F_4Br_2$	Halon – 2402	124-73-2	Dibromotetrafluoroethane *
Carbon Tetrachloride			
CCl_4	Carbon Tetrachloride	56-23-5	Carbon Tetrachloride *
1,1,1-trichloroethane			
$C_2H_3Cl_3$	Methyl Chloroform	71-55-6	1,1,1-trichloroethane *
Methyl Bromide			
CH_3Br	Methyl Bromide	74-83-9	Methyl Bromide
Hydrobromofluorocarbons			
$CHFBr_2$	N/A	-	Dibromofluoromethane
CHF_2Br	HBFC-22B1	-	Bromodifluoromethane
CH_2FBr	N/A	-	Bromofluoromethane
C_2HFBr_4	N/A	-	Tetrabromofluoroethane
$C_2HF_2Br_3$	N/A	-	Tribromodifluoroethane
$C_2HF_3Br_2$	N/A	-	Dibromotrifluoroethane
C_2HF_4Br	N/A	-	Bromotetrafluoroethane
$C_2H_2FBr_3$	N/A	-	Tribromofluoroethane
$C_2H_2F_2Br_2$	N/A	-	Dibromodifluoroethane
$C_2H_2F_3Br$	N/A	-	Bromotrifluoroethane
$C_2H_3FBr_2$	N/A	-	Dibromofluoroethane
$C_2H_3F_2Br$	N/A	-	Bromodifluoroethane
C_2H_4FBr	N/A	-	Bromofluoroethane
C_3HFBr_6	N/A	-	Hexabromofluoropropane

Table 4-1: Table C2.T10 - Ozone Depleting Substances (continued)

Molecular Formula	Common Name	CAS Number	Chemical Name
$C_3HF_2Br_5$	N/A	-	Pentabromodifluoropropane
$C_3HF_3Br_4$	N/A	-	Tetrabromotrifluoropropane
$C_3HF_4Br_3$	N/A	-	Tribromotetrafluoropropane
$C_3HF_5Br_2$	N/A	-	Dibromopentafluoropropane
C_3HF_6Br	N/A	-	Bromohexafluoropropane
$C_3H_2FBr_5$	N/A	-	Pentabromofluoropropane
$C_3H_2F_2Br_4$	N/A	-	Tetrabromodifluoropropane
$C_3H_2F_3Br_3$	N/A	-	Tribromotrifluoropropane
$C_3H_2F_4Br_2$	N/A	-	Dibromotetrafluoropropane
$C_3H_2F_5Br$	N/A	-	Bromopentafluoropropane
$C_3H_3FBr_4$	N/A	-	Tetrabromofluoropropane
$C_3H_3F_2Br_3$	N/A	-	Tribromodifluoropropane
$C_3HF_3Br_2$	N/A	-	Dibromotrifluoropropane
$C_3H_3F_4Br$	N/A	-	Bromotetrafluoropropane
$C_3H_4FBr_3$	N/A	-	Tribromofluoropropane
$C_3H_4F_2Br_2$	N/A	-	Dibromodifluoropropane
$C_3H_4F_3Br$	N/A	-	Bromotrifluoropropane
$C_3H_5FBr_2$	N/A	-	Dibromofluoropropane
$C_3H_5F_2Br$	N/A	-	Bromodifluoropropane
C_3H_6FBr	N/A	-	Bromofluoropropane
Hydrochlorofluorocarbons (HCFCs)			
$CHFCl_2$	HCFC – 21	-	Dichlorofluoromethane
CHF_2Cl	HCFC – 22	-	Chlorodifluoromethane *
CH_2FCl	HCFC – 31	-	Chlorofluoromethane
C_2HFCl_4	HCFC – 121	-	Tetrachlorofluoroethane
$C_2HF_2Cl_3$	HCFC – 122	-	Trichlorodifluoroethane
$C_2HF_3Cl_2$	HCFC – 123	-	Dichlorotrifluoroethane
C_2HF_4Cl	HCFC – 124	-	Chlorotetrafluoroethane
$C_2H_2FCl_3$	HCFC – 131	-	Trichlorofluoroethane
$C_2H_2F_2Cl_2$	HCFC – 132	-	Dichlorodifluoroethane
$C_2H_2F_3Cl$	HCFC – 133	-	Chlorotrifluoroethane
$C_2H_3FCl_2$	HCFC – 141	-	Dichlorofluoroethane
CH_3CFCl_2	HCFC – 141b	-	1,1-dichloro-1-fluoroethane
$C_2H_3F_2Cl$	HCFC – 142	-	Chlorodifluoroethane
CH_3CF_2Cl	HCFC – 142b	-	1-chloro-1,1-difluoroethane
C_2H_4FCl	HCFC – 151	-	Chlorofluoroethane
C_3HFCl_6	HCFC – 221	-	Hexachlorofluoropropane
$C_3HF_2Cl_5$	HCFC – 222	-	Pentachlorodifluoropropane
$C_3HF_3Cl_4$	HCFC – 223	-	Tetrachlorotrifluoropropane
$C_3HF_4Cl_3$	HCFC – 224	-	Trichlorotetrafluoropropane
$C_3HF_5Cl_2$	HCFC – 225	-	Dichloropentafluoropropane
$CF_3CF_2CHCl_2$	HCFC – 225ca	-	1,1-dichloro-2,2,3,3,3-pentafluoropropane
CF_2ClCF_2CHClF	HCFC – 225cb	-	1,3-dichloro-1,2,2,3,3-pentafluoropropane
C_3HF_6Cl	HCFC – 226	-	Chlorohexafluoropropane
$C_3H_2FCl_5$	HCFC – 231	-	Pentachlorofluoropropane

Table 4-1: Table C2.T10 - Ozone Depleting Substances (continued)

Molecular Formula	Common Name	CAS Number	Chemical Name
$C_3H_2F_2Cl_4$	HCFC – 232	-	Tetrachlorodifluoropropane
$C_3H_2F_3Cl_3$	HCFC – 233	-	Trichlorotrifluoropropane
$C_3H_2F_4Cl_2$	HCFC – 234	-	Dichlorotetrafluoropropane
$C_3H_2F_5Cl$	HCFC – 235	-	Chloropentafluoropropane
$C_3H_3FCl_4$	HCFC – 241	-	Tetrachlorofluoropropane
$C_3H_3F_2Cl_3$	HCFC – 242	-	Trichlorodifluoropropane
$C_3H_3F_3Cl_2$	HCFC – 243	-	Dichlorotrifluoropropane
$C_3H_3F_4Cl$	HCFC – 244	-	Chlorotetrafluoropropane
$C_3H_4FCl_3$	HCFC – 251	-	Trichlorofluoropropane
$C_3H_4F_2Cl_2$	HCFC – 252	-	Dichlorodifluoropropane
$C_3H_4F_3Cl$	HCFC – 253	-	Chlorotrifluoropropane
$C_3H_5FCl_2$	HCFC – 261	-	Dichlorofluoropropane
$C_3H_5F_2Cl$	HCFC – 262	-	Chlorodifluoropropane
C_3H_6FCl	HCFC – 271	-	Chlorofluoropropane

* These ODSs are designated as restricted use ODSs in Germany.

These are the following facts in regard to Table 4-1:

General Restrictions on the use of ODS:

- FGS Section C2.3.6.1: Any operation, maintenance, or shut-down procedures involving ODSs must not allow the substances to escape into the atmosphere and must conform to the state of the art practices, except for actual emergency use of fire extinguishing substances. Fully trained persons having the appropriate equipment will perform such work.

- FGS Section C2.3.6.6: Dismantling or disposal of equipment with ODS shall be recovered for disposition according to DoD 4160.21-M, Defense Materiel Disposition Manual, Chapter 10/ DoD Ozone Depleting Substances Turn-In & Requisitioning Procedures. In Germany the recovery station for Army ODS is located at Germersheim (see Chapter 5).

Restrictions on the use of ODS I:

- FGS Section C2.3.6.3: The distribution, or use (i.e. utilization in maintenance or servicing of products and equipment) of the following ODS is prohibited:
  Chlorofluorocarbons (CFCs) other fully halogenated CFCs; Halons; Carbon Tetrachloride; 1,1,1 Trichloroethane; and Hydrobromofluorocarbons.
  These substances are referred to as ODS I in this report. Running an existing system without maintenance (e.g. using a refrigerator) would not be classified as use.

General restrictions on the use of ODS II

- FGS Section C.2.3.6.4.3.4: The use of HCFC is prohibited in all refrigeration and air conditioning systems produced after 01 July 2002. This implies that the installation of new equipment containing HCFC is prohibited.

- FGS Section C2.3.6.4.3.5: As of January 1, 2010 the use of virgin HCFC shall be prohibited in the maintenance and servicing of existing refrigeration and air-conditioning equipment. An example of use would be the refilling of an existing system with refrigerant.

- FGS Section C2.3.6.4.3.6: As of 1 January 2015, the use of recycled HCFC shall be prohibited in the maintenance and servicing of existing refrigeration and air-conditioning equipment. An example of use would be the refilling of an existing system with refrigerant.

Notwithstanding the above, the management of CFCs and Halons, which are used in military aircraft or tactical vehicle systems, shall be accomplished in accordance with the appropriate DoD directive ASA(IE) ODS MEMO 13 FEB 96.

4.2 German and European Regulations

Production, trade, use and replacement of ODSs in Germany are regulated by the Regulation Banning CFC and Halon (FCKW-Halon-Verbots-Verordnung), dated 6 May 1991, and the corresponding European Regulation, the Council Regulation No. 2037/2000 of 29 June 2000 on Substances that Deplete the Ozone Layer.

4.2.1 FCKW-Halon-Verbots-Verordnung

The German Regulation refers to the same substances and products identified with an asterisk in Table 4-1, plus methyl bromide and hydrobromofluorocarbons. It generally prohibits the use of all CFCs (ODS I). There are specific requirements for operation, maintenance, and decommissioning of equipment with ODS. The requirements are:

- It is prohibited when operating, maintaining or decommissioning products containing refrigerants or fire extinguishing materials to let these substances evaporate into the atmosphere.
- For providers of listed substances it is mandatory to take these products back after decommissioning, or to guarantee the recovery of the substances via a third party.
- Maintenance and decommissioning of units containing refrigerants or fire extinguishing substances and recovery of these substances shall only be performed by skilled personal having the appropriate technical equipment.
- Records about type and quantities of recovered substances shall be written down and kept for at least three years, to be presented to the Authorities if desired.

Prohibitions on new units containing ODS are described below:

- On 1 January 1992, the use of listed chemicals in new units containing more than 5 kg of refrigerants, foamed materials, solvents, and fire extinguishing halons was prohibited.
- On 1 January 1995, the use of listed chemicals in new units containing less than 5 kg of refrigerants was prohibited.
- On 1 January 2000, the use of R22 in new units was prohibited.

According to the Regulation, maintenance and decommissioning of cooling units shall only be performed by skilled and trained personnel with the required technical equipment. However, there are no special procedures for approval of this type of work. Local authorities are typically satisfied if work is performed under the guidance of a skilled Klima- und Kälteanlagenbauer.

Recovered ODS must be properly disposed of in accordance with the German Recycling Economy/Waste Law (Kreislaufwirtschafts-/Abfallgesetz), however, ODS from US Installations will be accomplished according to FGS. For example recovered R12 must be destroyed. In general, this consists of thermal cracking through incineration. Written records regarding collection and disposal of listed refrigerants must be kept by the disposal firm for three years.

4.2.2 European Council Regulation No. 2037/2000

The European Regulation on Substances that deplete the Ozone Layer (Regulation EC No 2037/2000) provides the legal frame work for ODS phase out within the member countries of the European Community. The Regulation 2037/2000 was published in the Official Journal L244 of 29 September 2000 and became effective for Germany on October 1, 2000.

This regulation addresses eight groups of controlled substances, for which differing degrees of restrictions are proclaimed. The eight groups of chemicals are:

I., II. Chlorofluorocarbons
III. Halons
IV. Carbon tetrachloride
V. 1,1,1-trichloroethane
VI. Methyl bromide
VII. Hydrobromofluorocarbons
VIII. Hydrochlorofluorocarbons

The substances of:
Groups I to VII are ODS I
Group VIII consists of 38 HCFC, which include all the ODS II of the FGS.

In general, the EU regulation is more stringent than the German FCKW-Halon Verbotsverordnung. Since EU regulations are adopted by Germany they are pertinent to this report and to the U.S. Army.

ODS I - CFC

- The use of ODS I as refrigerant in new equipment has been prohibited in Germany since the mid-1990s.

- For existing equipment Article 4, paragraph 4(iii) states that the use of ODS I (Groups I-VI) is prohibited since 01 January 2001 for the maintenance and servicing of refrigeration and air-conditioning equipment. Every refill of existing refrigeration or air conditioning equipment with ODS 1 is illegal.

- Article 4, paragraph 1, states that, the use of ODS (Groups I-VI) for military purposes will be temporarily allowed until 31 December 2008. This will apply to existing military applications where it is demonstrated that for a particular use, technically and economically feasible alternative substances or technologies are not available or cannot be used. This temporary exemption may be granted if requested by the Authorities of an EU member country. Also Annex VII of the Regulation states various scenarios ("critical use") in which the use of Halons 1301 and 1211 is accepted.

ODS II - HCFC

A step-by-step time frame is given in Article 5, paragraph 1(c)(i-v) for the phase-out of hydrochlorofluorocarbons (HCFCs), Group VIII (e.g., R22). This time frame is described below:

- Article 5, paragraph 1(c)(iv): The use of HCFC is prohibited as refrigerants in all refrigeration and air-conditioning equipment produced after 31 December 2000 except for: fixed air-conditioning equipment, with a cooling capacity of less than 100kW
- Article 5, paragraph 1(c)(iv): The use of HCFC will be prohibited from 1 January 2004 in all equipment produced after 31 December 2003.
- Article 5, paragraph 1(c)(v): The use of virgin HCFC will be prohibited in the maintenance and servicing of any refrigeration and air-conditioning equipment after 1 January 2010.
- Article 5, paragraph 1(c)(v): The use of any virgin or recycled HCFC will be prohibited after 1 January 2015.

Equipment containing ODS II (HCFC) has not been produced in Germany since the year 2000. It is not permitted to import equipment containing ODS II from other countries.

4.3 Army ODS Policy

Current Army policy on ODS elimination in their facilities is described in two documents the ACSIM policy memo of 25 November 2002, "Change in Army Policy for Elimination of Ozone Depleting Chemicals" and the "Green Book" – "Guide to Preparing Ozone-Depleting Chemical Elimination Plans for Installations" 14 January 1999.
The key points found within these two documents are listed below:

- Installation Commanders are responsible for ODS elimination.
- Tenant Commanders are responsible for complying with host ODS policies and supporting host ODS elimination efforts.
- Overseas installations must comply with applicable Final Governing Standards and any applicable international treaty obligations.
- Dependency on the commercial availability of ODS I shall be eliminated by end of FY03.
- Installations may not contract for the use of CFC
- All ODS installed in Army facilities must be recovered and turned into the Army ODS Reserve.
- ODS Alternatives must be first approved by the EPA Significant New Alternatives Policy (SNAP) Program and must receive toxicity clearance from the Army Surgeon General before being used in Army Facilities.

4.4 U.S. Regulations

As stated above, the U.S. regulations are presented for information purposes only. Army and DoD policies noted at the end of this section, however, should be applied to the greatest extent possible.

4.4.1 Title VI Clean Air Act

Title VI of the Clean Air Act contains a number of rulings on the operation and maintenance of facility air conditioning and refrigeration equipment. Included in these rulings are the following requirements:

- CAA Section 604: EPA Phase-out schedule of CFC same as EU regulations- allowance to limit import and production.
- CAA Section 606: EPA can accelerating schedule of phase out of CFC and HCFC if certain issues occur.
- CAA Section 608: No venting of any refrigerant or halon during the service, maintenance, repair, or disposal of air conditioning, refrigeration, and fire suppression equipment.
- CAA Section 608: All technicians who service air conditioning and refrigeration equipment must be EPA certified. Some sales restrictions.
- CAA Section 608: Only EPA-certified technicians may purchase CFCs.
- CAA Section 608: Only EPA-approved recovery/recycling equipment may be used, and any operation using such equipment must be EPA certified.

- CAA Section 608: Substantial leaks in air conditioning and refrigeration equipment with a charge of 50 pounds (23 Kg) or more must be repaired.
- CAA Section 612: SNAP established a process for continuing review of substitutes to determine acceptability and provides a petition to add and delete substances from published list.

No military or tenant personnel have been identified as providing maintenance support for this equipment. No military technicians are therefore liable to the training and certification requirements of Section 608 of the Clean Air Act.

4.4.2 Clean Air Act – Federal Register Notices from August 21, 2003

Through the EPA SNAP program, the EPA can review and classify potential ODS alternatives. The last notice accordingly has been sent out on August 21, 2003. FRL-7547-2 "Protection of Stratospheric Ozone: Notice 18 for Significant New Alternatives Policy Program (SNAP)" which has an expanded list of acceptable substitutes for ozone depleting substances (ODS).

Several alternative refrigerants were identified at the 293rd BSB during the ODS survey. The most common were R407C and R134A, which have received EPA SNAP approval. The most current SNAP information can be found at http://www.epa.gov/ozone/title6/index.html. As of August 2000, the alternative refrigerants R134A and R407C have received toxicity clearance from the Army Surgeon General. The most current information for Army toxicity clearances can be found at http://chppm-www.apgea.army.mil.

4.4.3 Public Law 102-484 – Section 326

This is the Defence Authorization Act for FY 1993, in which DoD is prohibited from awarding any contract after June 1993 that requires the use of a ODS I. This applies to purchase of equipment, as well as service contracts.

If there is no suitable substitute available for the ODS, however, such contracts may be awarded with signed approval from a General Officer or Senior Executive Service (SES). All DoD approvals are annually compiled by each Service and submitted to Congress. Such approval is not required if previously recovered CFCs are being used, even those provided to the servicing contractor as government furnished equipment (GFE). The 293rd BSB has not submitted any Senior Approval Official documents.

5.0 RECOVERY AND TURN-IN

"All CFC refrigerants in serviced equipment must be recovered before the equipment is retired. It is needed for the continued operation of CFC equipment on your installation. If in excess to your requirements, it is needed by the Army ODS Reserve."
ACSIM Memorandum 3 July 1997

"Installation Commanders must eliminate their dependency on the commercial availability of Class 1 ODS by end of FY03"
ACSIM Memorandum 7 January 2003

The primary turn-in site for the DoD ODS Reserve is located at DDRV in Richmond, Va. USAREUR policy requires that recovered ODS I CFCs be shipped to the Army ODS Reserve in Germersheim. This site has been available since 1997. In the future, all recovered ODS I CFCs will be shipped to the ODS Reserve and a record of ODS recovery will be kept in Table 5-1. Since the recovered CFCs will remain within Army ownership, the shipment of recovered CFCs to the ODS Reserve will not be in violation of host nation laws.

The DoD ODS Reserve is managed by Defense Logistics Agency (DLA) through the Defense Supply Center, Richmond (DSCR) and includes an OCONUS collection point at Defense Distribution Depot Europe (DDDE)-Germersheim, Germany. No authorization is required to turn ODSs into the Army ODS Reserve. Government recovery cylinders are available free of charge through DSCR. DSCR will also cover turn-in shipping costs that exceed $250 by forwarding a MIPR to the shipping unit. All containers must be packaged, labeled and transported in compliance with all applicable requirements. Details of the DoD ODS turn-in procedures are provided in the Appendix A.

Maintaining the ODS I recovery record is the responsibility of the BSB Environmental Management Office according to Installation Management Agency – Europe.

Further information can be taken from

https://www.denix.osd.mil/denix/Public/News/DLA/ODS/sect2.html

- 5-1 Table ODS I Recovery Record

5.1 Table: ODS I Recovery Record

ODS	From Bldg	Container NSN	Container Size	No. Containers	Total Kg	Excess Yes/No	Storage Location	Storage POC	Kg Left	Recovery Date	Transfer Document No.

6.0 MANAGEMENT

"Overseas installations must comply with applicable Final Governing Standards and any applicable international treaty obligations."
ACSIM ODEP ODS Policy Memorandum 07 January 2003

"General Use Prohibition. The distribution or use (i.e., utilization in maintenance or servicing of products and equipment) of the following ODS is prohibited. Running an existing system without maintenance (e.g., using a refrigerator) would not be classified as use.

Chlorofluorocarbons (CFCs);
Other fully halogenated CFCs;
Halons (except as specified in C2.3.6.3.1);
Carbon tetrachloride;
1,1,1-trichloroethane; and
Hydrobromofluorocarbons."

FGS for Germany January 2003 Chapter 2 section 3.6.3

"Control of the placing on the market and use of controlled substances:
1. Subject to paragraphs 4 and 5, the placing on the market and the use of the following controlled substances shall be prohibited:
(a) chlorofluorocarbons;
(b) other fully halogenated chlorofluorocarbons;
(c) halons;
(d) carbon tetrachloride;
(e) 1,1,1-trichloroethane; and
(f) hydrobromofluorocarbons."
EU Regulation 2037/2000 29 June 2000 Chapter 2 Article 4

Proper planning is the key to:
1. Phasing out all ODS I from the BSB in the near future
2. Phasing out ODS II by the target date of 2015

The 293rd BSB has already successfully eliminated all installed halon from the installation. It can therefore focus its attention on the elimination of CFCs.

Starting in FY 2004, the ODS Elimination Team will routinely compile project information yearly on all refrigeration equipment with R12 or R502 refrigerant. The tables in Section 6 will be updated to reflect the changing status of the equipment. A report detailing this information will be presented to the 26th ASG.

6.1 ODS I Elimination

6.1.1 Decision Matrix

The assessment of the surveyed equipment could result in the recommendation:
- No Activity Required
- Upgrade
- Replace
- Replace when fails
- Remove
- Further Investigation

The corresponding Decision Matrix and guideline is shown in Appendix F, Field Forms.

6.1.2 Project Prioritization

A ranking system was developed to provide data for prioritization of projects.
The prioritization is based only on the environmental benefit and does not consider economic costs. The four factors considered are listed here in order of descending importance:

The factors considered for ranking are:
1. Type of ODS
2. Condition of equipment
3. Refrigeration Charge
4. Age of Equipment

For each of the factors certain points are allocated. A high number of points results in a high priority. The ranking system works as follows:

1. Type of ODS
   if "ODS I" or "unknown" then the record is considered for the ranking system,
   if ODS II or non-ODS the record is out of consideration.

2. Condition of equipment

out of service:	0 points (no direct statement about condition)
good:	0 points
fair:	20 points
poor:	50 points
not operational:	50 points

3. Refrigeration charge (x)

0 kg < x ≤ 1 kg:	0 points
1 kg < x ≤ 3 kg:	10 points
3 kg < x ≤ 10 kg:	15 points
10 kg < x ≤ 30 kg:	20 points
x > 30 kg:	25 points
x unknown :	20 points

4. Age of equipment; Year of construction (y)
   - $y \leq 1984$: 20 points
   - $1984 < y \leq 1994$: 10 points
   - y unknown: 10 points

A high number of points results in a high priority. The points are allocated automatically by the data-base. They are then added, enabling prioritization of projects.

The survey identified at BSB DPW owned facilities:
12 units containing ODS I
1 unit containing ODS unknown

A prioritized list of ODS I equipment, along with replacement cost estimates is provided in tables 6.4 and 6.5. The cost estimates were developed using information from vendors with current GSA contracts.

For each piece of equipment two prices are given.

Minimum cost – first figure – is the effort required to bring the equipment into compliance only by refilling with new, non-ODS refrigerant. A drop replacement includes the evacuation of the ODS I refrigerant, removal of the lubricant, refill with non-ODS refrigerant and the associated lubricant.

Maximum cost – second figure – is the effort to bring the equipment into compliance by replacing the unit. The replacement effort covers the compressor, condenser and refrigerant. Costs for the cooling chamber itself (e.g. thermal insulation for a walk-in refrigerator) are not covered by this figure.

The final price for an upgrade will be between these two figures. The decision whether to provide a drop in replacement or a full equipment replacement has to be done for each equipment individually by the BSB DPW.

6.1.3 Equipment with an ODS I content of 1 kg or more

The survey was limited to equipment containing more than 1 kg of ODS. The pertinent equipment is shown in table 6.4. Ranking and costs have been developed in accordance with chapter 6.1.2 of this report.

6.1.4 Equipment with an ODS I content of less than 1 kg

Equipment containing less than 1 kg of ODS was excluded from the survey scope. However, numerous < 1 kg units were identified and incorporated in the database The pertinent equipment is shown in table 6.5. Ranking and costs have been developed in accordance with chapter 6.1.2 of this report.

6.2 ODS Alternatives

6.2.1 EPA SNAP

Army policy states that you must have an EPA SNAP approval before you can use an ODS alternative.

EPA SNAP approved alternatives:

- ODS I:
  R22, R134A, R407C, R401A and R401B for Air Conditioning and Refrigeration
  R402A, R402B and R404A for Refrigeration

- ODS II:
  R407C for Air Conditioning and Refrigeration
  R134A for Household and Light Commercial Air Conditioning.

More information can be taken from http://www.epa.gov/ozone/snap.

6.2.2 Army Surgeon General

As of August 2003, the alternative refrigerants R407C, R134A, R401A, R401B, R402A and R404A have received toxicity clearance from the Army Surgeon General for the following uses: facilities air-conditioning and refrigeration, refrigeration systems and commercial refrigeration.

6.2.3 German Federal Environmental Agency

In Germany, ODS alternatives must be published by the Federal Environmental Agency.

The German Federal Environmental Agency (Umweltbundesamt) must publish an alternative refrigerant list with lower ozone-depleting potential for it to be law. The German Regulation allows R22 to still be used since there is no published alternative. However R12 and R502 are prohibited since there are published alternatives.

- **R12:** Alternative refrigerants for R12 were published on 21 December 1995. A grace period of 30 months was given for substituting the alternative refrigerants R134a or R22. Thus, since 21 June 1998, servicing ("topping off") equipment with R12 is no longer allowed. This includes virgin and recycled material. Hermetically sealed, plug-in units in operation before 1 January 1995 which contain less than 1 Kg of R12 are excluded. They may be operated until final decommissioning but not refilled.

- **R502:** Substitutes for R502 were published on 23 April 1999. Instead of R502, the refrigerants R404a, R407a, R407b, R507, a mixture of R32/R125/R143a, or any other refrigerant with a lower ozone depleting potential than R502 may be used. No grace period was stated. Therefore, since 23 April 1999, servicing equipment with R502 is not allowed. This includes virgin and recycled material. Compact, prefabricated heat pumps with an output of less than 25 KW are exempt. They may be operated until decommissioning but not refilled.

- **R22:** Substitutes for R22 have not yet been published. According to German law, therefore, cooling units produced and brought into operation before 1 January 2000 may be used and refilled with R22 until decommissioning, if they can guarantee no chemical substances will be released to the atmosphere.

6.2.4 Alternatives found at the 293rd BSB

The updated survey showed that:

Several ODS I alternatives were found within the 293rd BSB. The most common alternatives are R407C and R134A, which have EPA SNAP, Army Surgeon General and German Federal Environmental Agency approval.
Halon systems at the 293rd BSB have been replaced with a variety of alternatives. Ansul systems have replaced many of the halon systems in the kitchens

6.3 Further Investigation - Testing of ODS-unknown equipment

Of 1 refrigeration and air conditioning systems within the 293rd BSB Army facilities the refrigerant could not be identified.

In the case of unknown refrigerants the following procedures are used:

- The common procedure is to evacuate (drop-out) the refrigerant and to refill (drop-in) the piece of equipment with an alternative standard refrigerant. Standardized drop in fluids exist for a/c units, refrigeration and freezer units. Note: If ODS I were to have been found in the equipment, it would have been to replaced in any case.

- Identification of the refrigerant by means of a physical test is also possible. This analysis has to be performed in a chemical testing laboratory with that related expense. This is obviously the less attractive option.

The following information is also included in this chapter:

- 6.4 Table ODS I Project Estimate; ODS content ≥ 1 kg
- 6.5 Table ODS I Project Estimate; ODS content < 1 kg
- 6.6 Table Equipment requiring further investigation

6.4 Table: ODS I Project Estimate; ODS content ≥1 kg

(only BSB DPW incl. DoDDS and MWR, w/o AAFES)

ODS ID No	Rank	ARLOC	Installation	Bldg	Location	Equipment	Manufac-turer	Model / Serial No	Condition	Recommen-dation	Charge	Refriger-ant	Max Cost	Min Cost
0095	1	GE 140	COLEMAN BARRACKS	86	Club, Kitchen	Ice cube maker	Scotsman	CM65OAF-6E / 602090-07L	Poor	Upgrade	1.1	R 502	€5,000	€600
0110	2	GE 140	COLEMAN BARRACKS	45	Mess hall, kitchen	Ice cube maker	Ross Temp	RC360BC-2-50 / JJ6432	Fair	Upgrade	1.1	R 12	€5,000	€600
0026	3	GE 82J	SULLIVAN BARRACKS	240	Exterior	Walk-in-refrigerator	L 'Unite Hermetique	DAJ85113T / 22752301	Fair	Upgrade	3.5	R 502	€4,000	€700
0127	4	GE 856	TURLEY BARRACKS	475	Kitchen	6-Door-Refrigerator	Jordan	SKT-74-33-H / 215-535-8300	Fair	Upgrade	3.0	R 12	€11,000	€800
0126	5	GE 856	TURLEY BARRACKS	475	Kitchen	6-Door-Refrigerator	Jordan	SKT-74-SS-H / 215-535-8300	Fair	Upgrade	3.0	R 12	€11,000	€800
0125	6	GE 856	TURLEY BARRACKS	475	Kitchen	6-Door-Refrigerator	Jordan	SKT-74-SS-H / 215-535-8300	Fair	Upgrade	3.0	R 12	€11,000	€800
0124	7	GE 856	TURLEY BARRACKS	475	Kitchen	6-Door-Refrigerator	Jordan	SKT24SSH / S6144992E	Fair	Upgrade	3.0	R 12	€11,000	€800

6.5 Table: ODS I Project Estimate; ODS content ≤1 kg

(only BSB DPW incl. DoDDS and MWR, w/o AAFES)

ODS ID No	Rank	ARLOC	Installation	Bldg	Location	Equipment	Manufac-turer	Model / Serial No	Condition	Recommen-dation	Charge	Refriger-ant	Max Cost	Min Cost
0111	1	GE 140	COLEMAN BARRACKS	45	Mess hall, kitchen	2-Door-Freezer	Gram	J2192K / 164DA01	Poor	Replace	0.8	R 502	€8,000	€700
0098	2	GE 140	COLEMAN BARRACKS	86	Club, Kitchen	Cooler	Küba	Unknown / 80663682	Fair	Replace when fails	0.5	R 12	€6,000	€600
0097	3	GE 140	COLEMAN BARRACKS	86	Club, Kitchen	Cooler	Küba	Unknown / 8073277	Fair	Replace when fails	0.5	R 12	€6,000	€600
0096	4	GE 140	COLEMAN BARRACKS	86	Club, Kitchen	Cooler	Küba	Unknown / 8070672	Fair	Replace when fails	0.5	R 12	€6,000	€600
1003	5	GE 07P	BENJAMIN FRANKLIN VILLAGE	747	store	Freezer	Starrett	ARG20033 / AZ201	Fair	Replace when fails	0.2	R 12	€6,000	€600

6.6 Table: Equipment requiring further investigation

(only BSB DPW incl. DoDDS and MWR, w/o AAFES)

EQUIPMENT REQUIRING TESTING OF REFRIGERANT											
ODS ID No	**Rank**	**ARLOC**	**Installation**	**Building**	**Location**	**Equipment**	**Manufacturer**	**Model / Serial No.**	**Condition**	**Charge (kg)**	**Year installed**
0016	1	GE 83C	TAYLOR BARRACKS	429	Exterior	A/C-Split-Unit	ASEA	M071LV4 / unknown	Poor	est. 10	unknown

7.0 RESOURCES

"All CFC refrigerants in serviced equipment must be recovered before the equipment is retired. It is needed for the continued operation of CFC equipment on your installation. If in excess to your requirements, it is needed by the Army ODS Reserve."
ACSIM Memorandum 3 July 1997

"There is no compelling need for Army installations to eliminate all ODS Is by the end of FY03. Instead, Installation Commanders must eliminate their dependency on the commercial availability of Class 1 ODSs by end of FY03…Army Environmental Program Requirements Policy and Guidance, projects or activities which in replacement of Class 1 ODSs, such as stationary Halon fire suppression system and facility refrigeration and chiller equipment, are not considered to be eligible for environmental funding. These activities are funded from the appropriate account of the installation's budget, but not the environmental account"
ACSIM ODEP ODS Policy Memorandum 7 January 2003

"Overseas installations must comply with applicable Final Governing Standards and any applicable international treaty obligations."
ACSIM ODEP ODS Policy Memorandum 25 November 2002

In order to meet the BSB goal of phasing out ODS I and eliminating dependency on commercial availability by end of 2003, all equipment identified in Table 3.6 has been evaluated for planning and budgeting purposes.

The ODS Elimination Team has four different sources of funding potentially available for ODS replacement projects. Each source has been evaluated for applicability to the equipment identified in the inventory. These sources and the extent to which the BSB plans on utilizing them for execution of the ODS projects are described below.

It has been concluded that currently the most likely funding source is SRM funds since environmental funding is not available at this time.

Funding sources are:

7.1 Installation Sustainment, Restoration and Maintenance (SRM) O&M Funds

SRM funds are used for maintenance and repair activities necessary to keep facilities in good working order. This includes regularly scheduled maintenance as well as anticipated major repairs or replacement of components that occur periodically over the expected service life of the facilities. As shown in Chapter 3, some of the refrigerator equipment containing ODS I at the BSB may be at or nearing the end of its useful service life. This obsolete equipment may only be minimally serviced and can be replaced as it breaks down. It will not be refilled with ODS I.

7.2 Special Program Funds

Special program funds are available in the areas of energy efficiency. Energy savings projects are most applicable to large equipment such as building chillers, which have significantly improved energy efficiency in recent years. No ODS I-containing equipment, for which significant efficiency improvements have been made, was identified during the field survey; however, the ODS Elimination Team will actively pursue any special program funds that may become applicable.

7.3 Installation Environmental OMA Funds

These funds, managed through the Army Environmental Program Requirements (EPR) process, are made available to ensure compliance with environmental regulations. In the past, environmental funds were available for retrofitting or upgrading equipment containing ODS with/to non-ODS only if it was out of compliance with the requirements of the FGS (leaking); this is no longer the case. However, even though environmental funding is not available for these projects, they shall be entered in the EPR for the purpose of identifying and tracking ODS use elimination projects on Army installations.
For detailed information see Chapter 46 of the EURO EPR WEBGUIDE FY 03.

7.4 Unit Specific Funds

Unit funding is unlikely since no operationally oriented projects have been identified; however, the ODS Elimination Team will actively pursue any unit specific funds that may become available and are applicable.

ACRONYMS

AAFES	Army/Air Force Exchange Service
ACSIM	Assistant Chief of Staff for Installation Management
AFN	Armed Forces Network
AG	Adjutant General
AIC	Army Installation Coordinator
APG	Aberdeen Proving Grounds
ASA	Assistant Secretary of the Army
ASG	Area Support Group
BSB	Base Support Battalion
BOS	Base Operation Services
CAS	Chemical Abstract Society
CFCs	Chlorofluorocarbons
CFR	Code of Federal Regulations
DDDE	Defense Distribution Depot Europe
DDRV	Defense Depot Richmond Virginia
DeCA	Defense Commissary Agency
DLA	Defense Logistics Agency
DoD	Department of Defense
DoDAAC	DoD Activity Address Code
DoDDS	Department of Defense Dependent Schools
DPW	Directorate of Public Works
DRMO	Defense Reutilization Marketing Office
DRMS	Defense Reutilization and Marketing Service
DSCR	Defense Supply Center Richmond
EPA	Environmental Protection Agency
EPR	Environmental Program Requirements
ESDP	Established Standard and Deadline Passed
FISC	Fleet Industrial Supply Center
FSC	Federal Supply Classes
FCKW	Fluorchlorkohlenwasserstoffe (German word for CFC)
FGS	Final Governing Standards
GFE	Government Furnished Equipment
GSA	General Services Agency
HCFCs	Hydrochlorofluorocarbons
IL&E	Installations, Logistics and Environment
IMDC	International Maritime Dangerous Goods Code
MACOM	Major Command
MDEP VENC	Management Decision Package Highly Visible Environmental Compliance
MEDCOM	Medical Command
MI	Military Intelligence
MILSTRIP	Military Standards Requisitioning and Issue Procedures
MIPR	Military Interdepartmental Purchase Request

MWR	Morale Welfare Recreation
NAF	Non Appropriated Fund
NATO SOFA SA	NATO Status of Forces Agreement Supplementary Agreement
NSN	National Stock Number
ODS	Ozone Depleting Substances
OCONUS	Outside the Continental United States
O&M	Operations and Maintenance
OMA	Operations and Maintenance Account
PBO	Property Book Officer
POC	Point of Contact
RM	Resource Management
RPMA	Real Property Maintenance Account
SES	Senior Executive Service
SNAP	Significant New Alternatives Policy (EPA)
SOFA	Status of Forces Agreement
SRM	Sustainment, Restoration and Maintenance
TMC	Total Maintenance Contract
USAREUR	U.S. Army Europe

APPENDICES

A) TURN IN PROCEDURES

B) SURVEY RESULTS FOR DPW FACILITIES
(incl. DODDS and MWR facilities; no DECA owned ODS equipment existing)

C) SURVEY RESULTS FOR AAFES FACILITIES

D) INSTALLATION MAPS OF THE 293RD BSB

E) DATABASE ON CD ROM

F) FIELD FORMS